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REFRACTIVE CHANGES AFTER PENETRATING KERATOPLASTY IN FUCHS' ENDOTHELIAL DYSTROPHY

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Purpose. The purpose of this study was to evaluate the changes of the refractive error in the follow up after penetrating keratoplasty for Fuchs' dystrophy.
Methods. Between 1980 and 1991 182 keratoplasties with mechanical trephination and single running suture were performed for Fuchs' dystrophy consecutively. The suture was removed 20,4 ± 7,5 months postoperatively. In 99 eyes a simultaneous cataract extraction and posterior chamber lens implantation was performed. The refractive power of the intraocular lens was choosen like in standard cataract surgery without keratoplasty.
Results. In eyes without simultaneous intraocular lens implantation the refractive error was +0,5 ± 1,9 dpt preoperatively, +3,1 ± 4,7 after 6 months, +2,1 ± 4,4 after 1 year -0,6 ± 3,7 after 2 years, -2,2 ± 3,2 after 3 years and -1,6 ± 3,7 after 5 years. In eyes with simultaneous posterior chamber lens implantation the refractive error was -1,8 ± 4,9 dpt preoperatively, -0,4 ± 4,4 after 6 months, +0,1 ± 4,7 after 1 year -1,1 ± 4,5 after 2 years, -2,5 ± 5,3 after 3 years and -3,9 ± 7,0 after 5 years. The difference between refractive error and the refractive prognosis preoperatively estimated by a-scan, was +1,4 dpt after 6 months and -2,0 dpt after 5 years.
Conclusion. In the follow up after keratoplasty with mechanical trephination and single running suture for Fuchs'dystrophy there is a myopic shift in the refractive error. This myopisation occures at the time of suture removal. There is a stabilization of the refractive error 3 to 4 years postoperatively. This myopisation has to be taken in account in refractive prognosis in cases of simultaneous lens implantation.

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TITLE : POST KERATOPLASTY REFRACTIVE ERRORS AND TANGENTIAL VERSUS SAGITTAL CORNEAL TOPOGRAPHY

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Purpose : Emmetropia is a common target after penetrating keratoplasty. The best way to achieve it often needs contact lens fitting and astigmatic keratotomy.

Methods : The shape of 27 corneas after PKP (24 patients) was determined with the EH 290 and we compared the difference between tangential dioptric plot versus sagittal dioptric plot.

Results : The final lenses were closer to those indicated by simulation with the tangential dioptric plot, especially for the peripheral curve (± 0,2 mm).

Conclusions : Tangential plot shows more detail of post-refractive surgical cornea and allows a more precise contact lens fitting for the peripheral curve.

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CORRELATIONS BETWEEN THE OPTICAL POWER OF HUMAN CORNEAL GRAFTS BEFORE AND AFTER TRANSPLANTATION

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Post-operative spherical and astigmatic refractive errors often cause a rather poor visual outcome after corneal transplantation despite almost perfect transparency of the corneal graft.
Purpose. To investigate whether the topography of the donor graft has any effect on the topography of the recipient cornea after transplantation.
Methods. The topography of 25 corneal grafts was measured before and after organ culture, and 1 week, 1, 3, 6, 12, and 24 months after corneal transplantation by TMS-1 photo-keratoscopy. At each instance, the central spherical optical power was determined.
Results. The donor grafts were on average 43.5 diopters (D), and their power did not change after trephination or incubation. Immediately after grafting, the refractive power fell 6 D to 37 D after 1 week. During the two years after transplantation, the power increased gradually to approximately 41.5 D, corresponding to a net flattening of 2 dioptres. There was a significant positive correlation between corneal power and the pre-OP donor graft power throughout the two years after transplantation. The correlation was strongest during the first months after transplantation.
Conclusion. The optical power of the donor corneal graft influences the corneal power of the grafted eye. *"Power Typing"* of donor grafts may be one way of reducing spherical post-transplant refractive errors.

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IMMUNOSUPPRESSIVE EFFECT OF CIS-UROCANIC ACID IN EXPERIMENTAL CORNEAL TRANSPLANTATION

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Purpose: The leading cause of corneal graft failure remains immunologic rejection, especially in patients with abnormally vascularized corneas (high-risk patients). We determined the effect of urocanic acid in prevention of corneal allograft rejection in the rabbit experimental model.
Methods: Model resembling the situation in human high-risk patients was used. Neovascularization in recipients' corneas was induced two weeks before transplantation . Control group (n=5) received subconjunctival injections of trans urocanic acid solution and the treated group (n=7) was injected with the solution of urocanic acid containing 50% of cis-izomer. Measurements of cis/trans isomer contents were performed by means of high liquid chromatography. The opacity and vascularization as markers of corneal graft rejection were determined twice a week in both groups of rabbits. Rabbits were sacrificed on day 90.
Results: The mean rejection time (MRT) in the control group was 22 (20-27) days. MRT in the treated group was 76 (57-90) days. The difference between MRT in both groups was statistically significant. (p=0,001).
Conclusions: Urocanic acid mixture containing 50% of cis-izomer applied subconjunctivally is potent immunosuppressive agent in the rabbit experimental corneal transplantation.